Remarks

After entry of the foregoing amendments, claims 37-50 are pending. Claim 37 has been amended to indicate that the anthraquinone quencher is covalently bound to the nucleic acid polymer. Support for this amendment can be found at least at Example 16 of the specification.

Applicants thank the examiner for the indication that the application contains allowable subject matter.

Title

Applicants accept the examiner's suggestion for the title.

Rejections Under 35 U.S.C. § 102

Claims 37-47, 49, and 50 were rejected under § 102(b) as anticipated by Batz et al. (U.S. Patent No. 6,117,973). The examiner cites to Example 11 of Batz et al. as teaching an anthraquinone quencher attached to a DNA (i.e., a nucleic acid polymer having a phosphodiester backbone) ending in a PNA. In fact, Batz et al. teach an anthraquine quencher bound to a peptide nucleic acid (PNA), which do not have a phosphodiester backbone. Applicants acknowledge that when the PNA is hybridized to a second molecule, a DNA, the quencher is arguably "attached" to DNA, albeit indirectly, through intermolecular base-pairing between the PNA and DNA molecules – a non-covalent interaction. In contrast, in the methods of the present invention, the anthraquinone quencher is directly attached to the nucleic acid polymer in the present invention. Accordingly, Applicants have amended claim 37 to clarify that the anthraquinone quencher is covalently bound to the nucleic acid polymer. Therefore, Applicants respectfully submit that Batz et al. does not anticipate claim 37 and request that the rejection be withdrawn.

Claims 38-47, 49, and 50 are each dependent on claim 37 and are, therefore, patentable over Batz et al. for at least the reasons discussed above with respect to claim 37.

Claim 50 is patentable over Batz et al. for the following additional reasons. The examiner cites to Formula VIA and claim 7 of Batz et al. as disclosing the quenchers of the

claimed method. Claim 7 of Batz et al is dependent on claim 1. Claim 1 is directed to the nucleic analogue probes of Batz et al., which lack a phosphodiester backbone. Claim 7 is then directed to a nucleic acid analogue having the specific quenchers attached thereto. However, claim 50 of the present application is dependent on claim 37 and therefore requires that the anthraquinone quencher is covalently bound to a nucleic acid polymer having a phosphodiester backbone. Thus, because Batz et al. does not teach a nucleic acid polymer having a phosphodiester backbone having an anthraquinone quencher covalently bound thereto, it does not anticipate claim 50.

Applicants respectfully request that the § 102 rejection over Batz et al. be withdrawn.

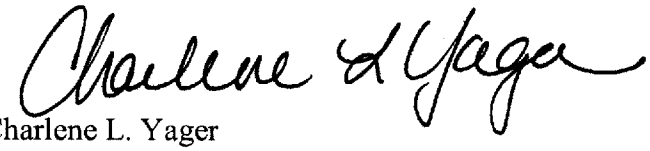
Rejections Under § 103

Claim 48 was rejected under § 103 as obvious over Batz et al. in view of Jenne et al. (U.S. Patent No. 6,451,535). The office action acknowledges that Batz et al. does not specifically teach separation of an anthraquinone quencher from a fluorophore by cleaving an RNAse restriction site between them. The office action cites Jenne et al. to address this deficiency. Claim 48 is dependent on claim 37. As is discussed above, Batz et al. does not teach a nucleic acid polymer having an anthraquinone quencher covalently bound thereto. Jenne et al. does not cure this deficiency. Thus, claim 48 is not obvious over Batz et al. in view of Jenne et al. and Applicants respectfully request that the rejection be withdrawn.

CONCLUSION

In light of the amendments and arguments above, Applicants respectfully submit that the claims are allowable. Should any issues remain, the examiner is invited to contact the undersigned at the phone number below.

Respectfully submitted,



Charlene L. Yager
Reg. No. 48,887

File No. 013670-9004-US00
Michael Best & Friedrich LLP
One South Pinckney Street
P. O. Box 1806
Madison, WI 53701-1806
608.257.3501

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